An Electronographic Investigation of the Nitrides of Tungsten

confirmed. Nitriding in pre-dissociated ammonia at 700 °C for 1-2 hours gave this β-phase. W reflections were observed from the preparation. If the ammonia was not pre-dissociated, hexagonal phases, not described earlier, were found with a = 2.89 A and c = 15.3, 22.8, 23.4 or 32.8 A. The modification with the smallest c-dimension was examined further. Texture photographs were used giving the possible space group as one of those with h-k=3n , $l \neq 2n$ extinguished. There were two very weak reflections 305 and 307 contravening this. Intensities were measured with a photometer and Patterson syntheses which led to two-dimensional sections and projections on the xy0 and x0z planes. These data did not confirm earlier work (N. Schönberg, Acta Chem. Scand., 1954, Vol 8, pp 204-257). The space group D_{6h}^4 was chosen with W atoms in 2(c) positions and N in 4(f) and 2(c) positions. The f positions have one z parameter. The reliability factor for the hkl reflections was reduced finally to 29%. (Table of obs. and calc. Ø given for 80 reflections.)

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SOV/70-3-5-3/24

An Electronographic Investigation of the Nitrides of Tungsten

The final parameters were found to be $z_W = 0.06$ and $z_N = 0.16$ ($\pm$ 0.002 A). The potential heights of the W peaks in the 2(c) and 4(f) positions were found to be 2 100 and 1 365 V, respectively. No N atoms were in 4(e) positions. It is concluded that the structure is defective and that the 4(f) positions were filled by W atoms only to the extent of 50 to 75%. This was confirmed by the fall in the reliability factor to 19.5% when the composition was taken as $WN_{0.87}$ instead of W_3N_4 as at first. The contents of one cell are then $W_{4.6}N_4$.

The structure is layered.

Acknowledgments are made to B.K. Vaynshteyn.

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SOV/70-3-5-3/24

An Electronographic Investigation of the Nitrides of Tungsten

There are 9 figures, 2 tables and 4 references, 1 of which is Soviet, 1 Scandinavian, 1 German and 1 English.

ASSOCIATION: Institut kristallografii AN SSSR
(Institute of Crystallography of the Ac.Sc.USSR)

SUBMITTED: July 11, 1958

Card 4/4

PINSKER, Z.G.

Present-day state and prospects for the future of the neutrono-graphic method of studying materials. Zav. lab. 24 no.5:597-604 '58. (MIRA 11:6)
(Electrons—Diffraction) (Materials--Testing)

AUTHORS: Kurov [illegible]

TITLE: The Investigation [illegible] the Variation [illegible] Indium-Antimony [illegible]

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, [illegible], Vol 26, Nr [illegible] pp. 24-74 (USSR)

ABSTRACT: The electric properties as well as the phase composition of the films of In-Sb obtained by evaporation in vacuum, were investigated. For the preparation of the films the method of the simultaneous evaporation of two metals in vacuum as well as of their condensation on a respective basis at room temperature were used (reference 1). Referring to the diagram according to the data from ref. 2 on the state of the In-Sb system, where a single point maximum which corresponds to the InSb compound appears the authors assume that in a sample with variable composition which contains the whole number of alloys of the [illegible] system [illegible] properties [illegible] in a film [illegible] unsteady [illegible] annealed. The [illegible]

Card 1/3

The Investigation [illegible] Comp[illegible]
Indium-Antimony System

[illegible] modifications of InSb and the phases [illegible] where the [illegible] InSb [illegible] of the sample in [illegible] hexagonal [illegible] electronogra[m] while the rings of metallic [illegible] by means of the [illegible] of InSb [illegible] resistance [illegible]

Card 2/5

be explained. The jump of the thermo-e.m.f. force at the antimony end of the film corresponds with the boundary of crystalline antimony in the sample. At the other side of the boundary (the indium side) antimony forms an amorphous phase and is mixed InSb crystals. As was shown in ref.5 amorphous antimony has electron conductivity. With this we reserve change of the sign with thermo-e.m.f. as well as the formation of the minimum at the thermo-e.m.f. curve of the not annealed sample can be explained. Right of the minimum thermo-e.m.f. again changes its sign as the influence of the little InSb crystals with hole conductivity is preponderant. The fact that thermo e.m.f. at the boundary of crystalline and amorphous antimony phase suffers a jump in the direction of greater u-values (and not into the negative range) can possibly be dependent on the dissolution of indium in amorphous antimony. The course of the curves for the electric resistance of the films is also easily explained. The jump at the resistance curve (sample before annealing) is dependent on the fact that the specific resistance of the amorphous resistance is about 100-fold

The Investigation of Thin Layers of the Variable-Composition [illegible] Indium-Antimony System

[illegible] better than that of crystalline antimony in thin films [illegible] ref. 6]. The first maximum is dependent on the amorphous antimony as well as on the minimum of the thickness of film. The second maximum is observed where the composition corresponds to the exact stoichiometric ratio of InSb. The authors show that an abundance of indium or antimony does not change the kind of conductivity of InSb, which coincides with the data of ref. 7. The investigation of the temperature dependence of electric conductivity of InSb films shows that within the range of from 80°K to room temperature specific electric conductivity changes only little with the temperature. The measurement of the Hall-e.m.f. of InSb films at room temperature showed ~ [illegible] cm^3/C. The movability of the charge carriers (holes) in the film was ~5-8 $cm^2/V.sec$.
There are 7 figures, and 12 references, 9 of which are Slavic.

Card 1/5

The Investigation of Thin Layers of the Variable-Composition [illegible]
Indium-Antimony System

ASSOCIATION: Institute for Crystallography AN USSR, Moscow
(Institut kristallografii AN SSSR Moskva).

SUBMITTED: June 11, 1957

AVAILABLE: Library of Congress

Card 1/3

24761

AUTHORS: Kirov, G. A., Linsker, E. Z.

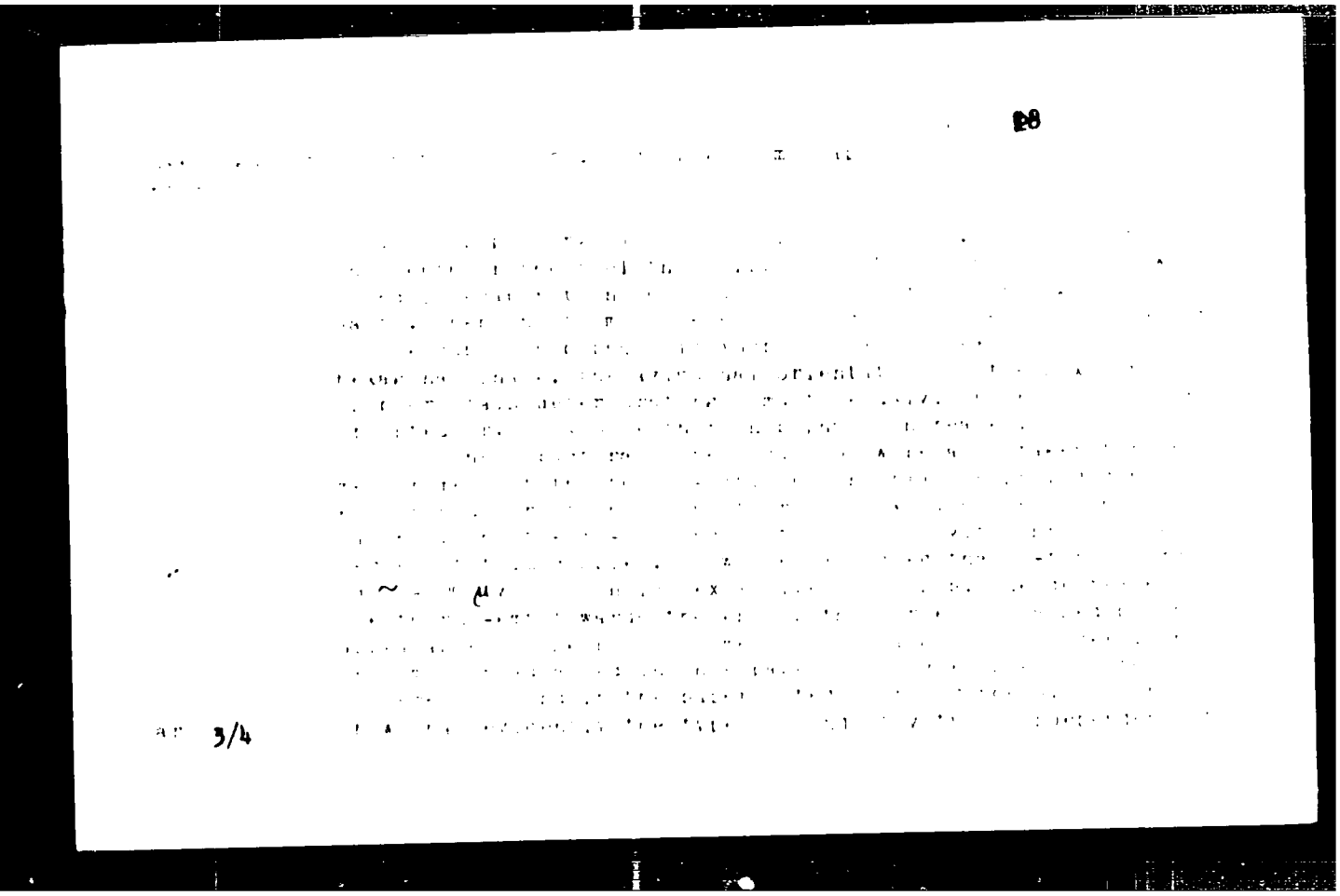
TITLE: Investigation of Thin Films Produced by Vacuum Evaporation of Indium Antimonide (Issledovaniye tonkikh plenok, poluchennykh putem isparen'ya v vakuume

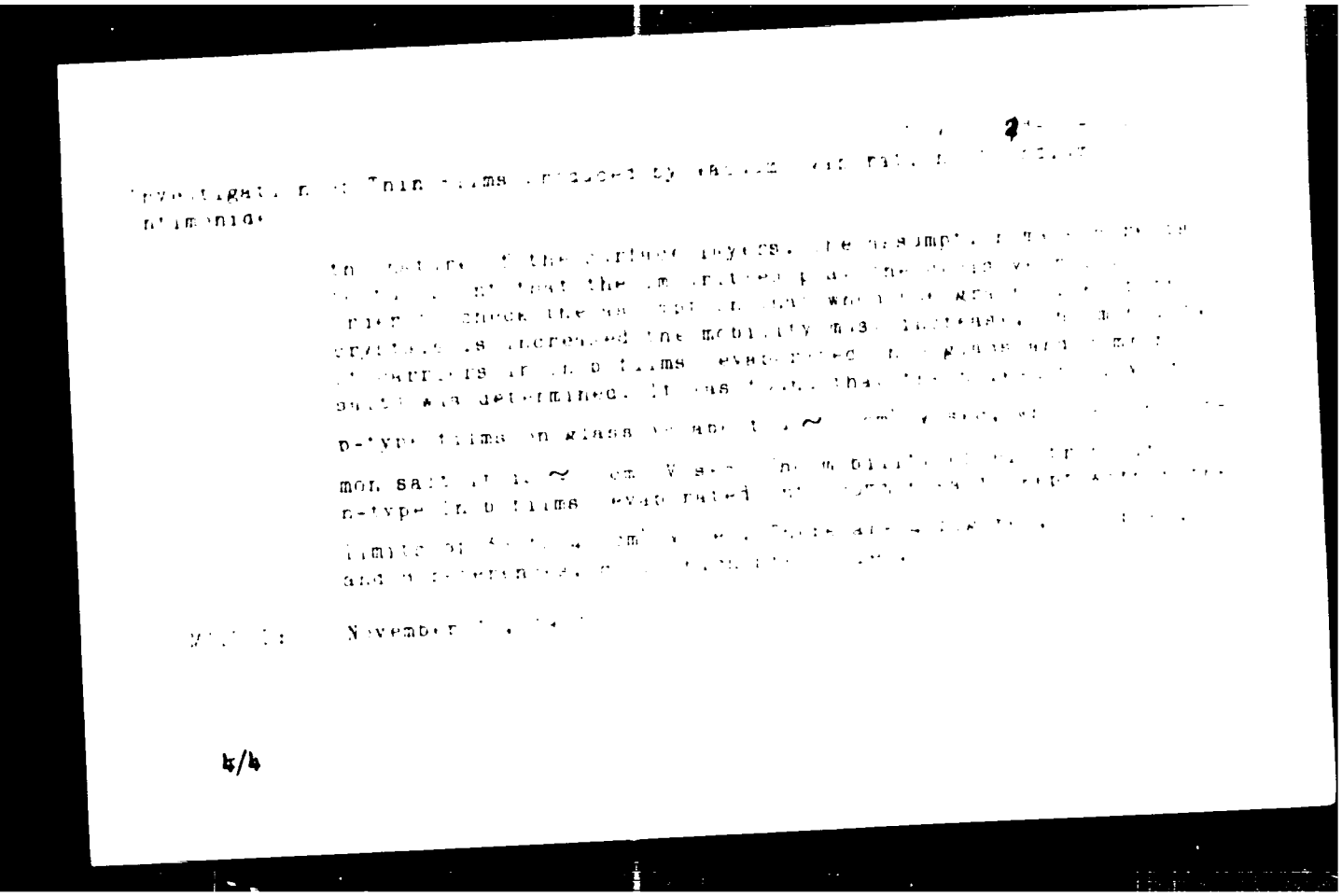
PERIODICAL: Zhurnal tekhnicheskoy fiziki, Vol 28, No [illegible], pp [illegible]

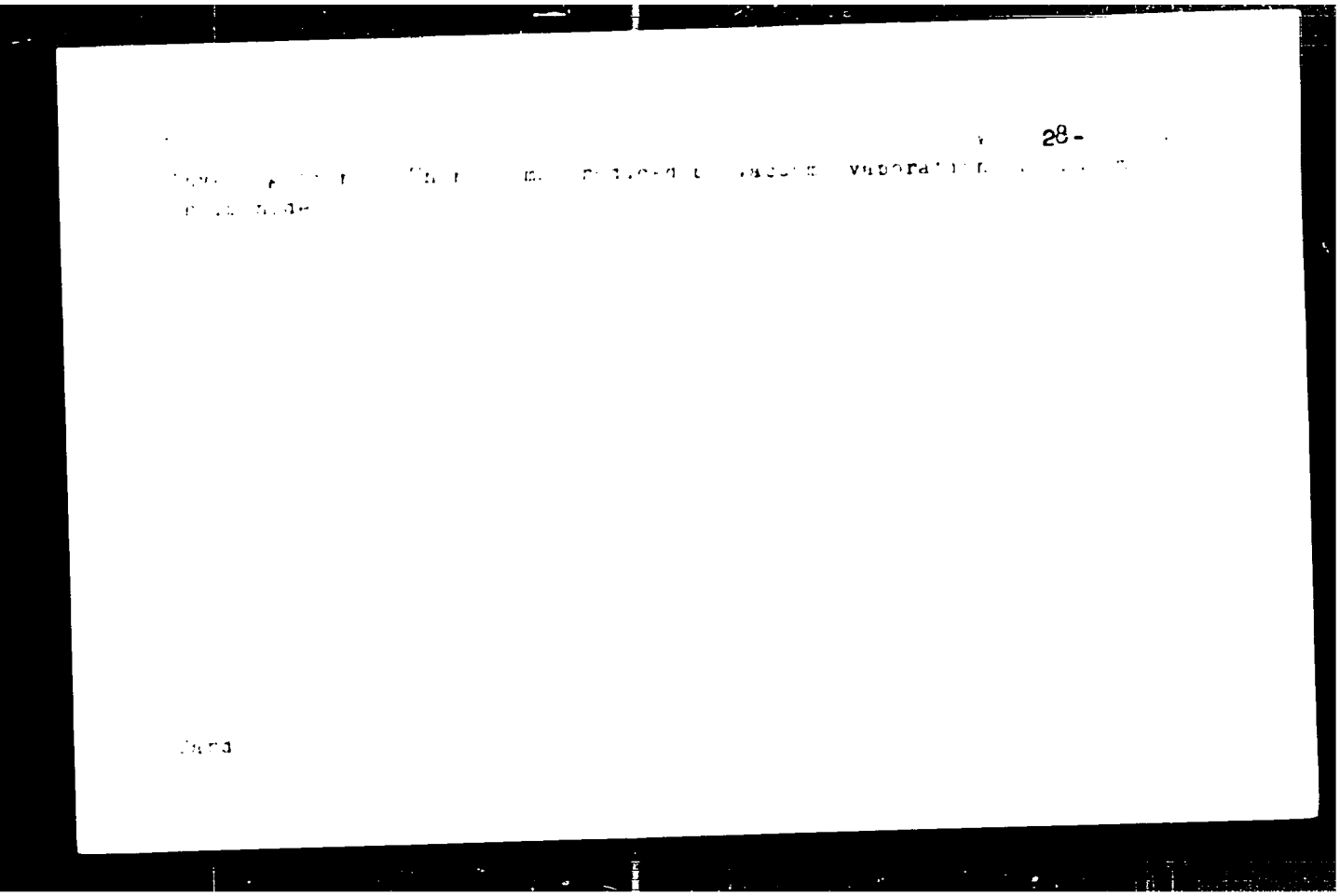
ABSTRACT: This is a presentation of the results obtained by the investigation of some electrical properties and of the structure of films produced by a vacuum sublimation of small [illegible] The evaporation was carried out in a metal vacuum unit under a pressure of ~ [illegible] mm of mercury column. Little thimbles formed by tungsten wire bent in a spiral form being used. The weighed portion of InSb of a few milligrams usually afforded the material for about 1 to [illegible] sublimations. This series of film samples were obtained, films of the same series exhibiting a different external appearance and different properties. A modification of the color of the film is accompanied by a variation of the electric conductivity. The thermo-emf of the films was measured. The measurements were performed with a copper thermo-

Card 1/4

probe the temperature of which exceeded room temperature by 40°C. It appeared that the magnitude and the sign of the thermo-emf are dependent upon the serial number of the specimen, whereas no noticeable difference was found between films evaporated onto glass or common salt. Electron diffraction investigations were to provide information on the relation between the electric properties of the films and their structure, thinner films (about 10^{-6} cm) being used than for the study of the electric properties ($\sim 1\mu$). The layer composition of successive evaporation samples varied gradually from pure antimony to InSb (cubic and hexagonal phase) (Ref 4) and finally changed to InSb and In. The first evaporations on a celluloid film kept at room temperature yielded amorphous antimony coatings, if thin, and crystalline antimony, if thicker. The following samples consisted of an amorphous mixture of antimony and indium, besides antimony. During crystallization a layer consisting of crystalline antimony and of InSb (cubic and hexagonal phase was formed. Further sublimations on a cold celluloid film produced



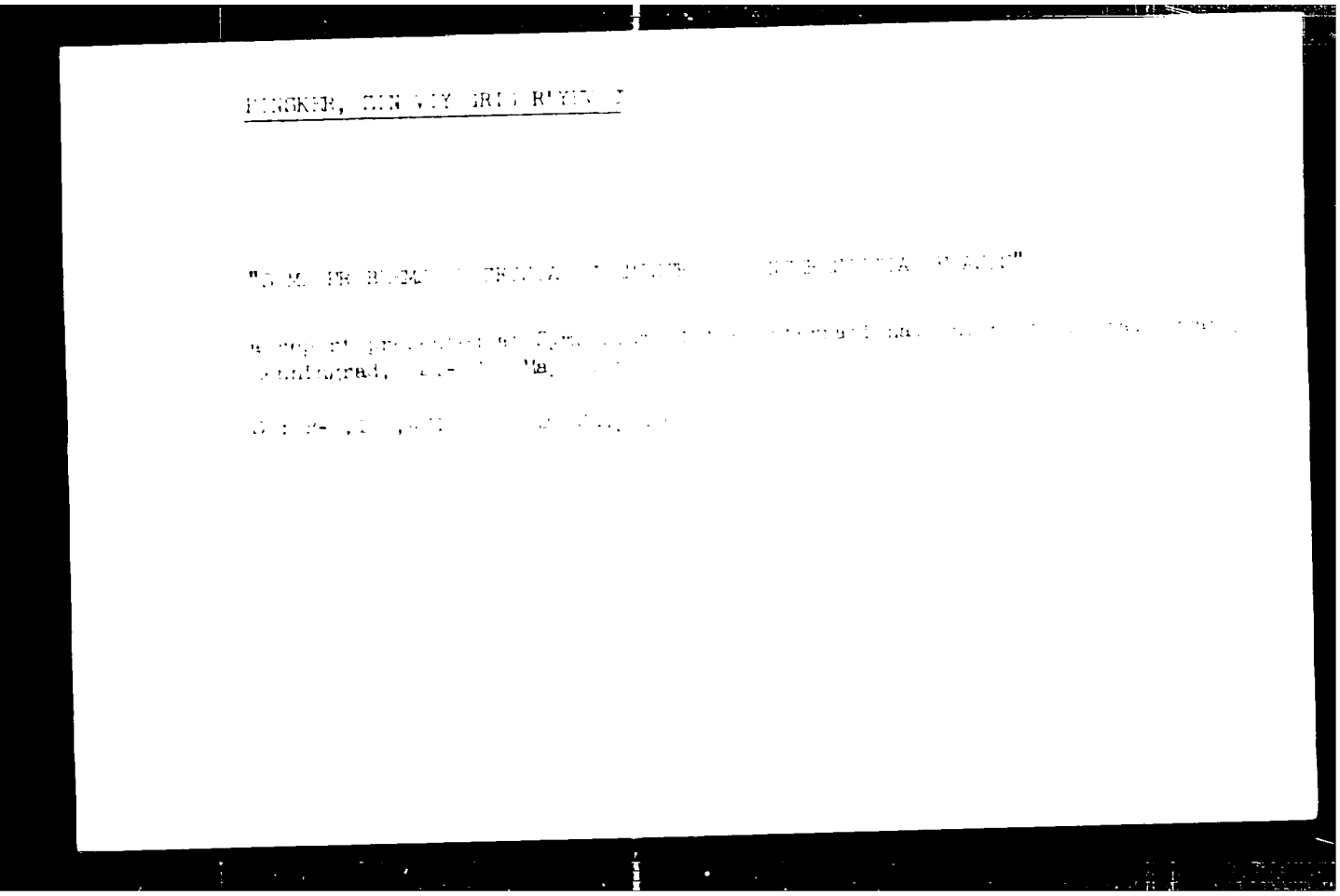




PINSKER, Z.G.

"Electron Diffraction Structure Analysis Using Kinematic and Dynamic Scattering"

A report presented at Symposium of the International Union of Crystallography Leningrad, 21-27 May 1959



SOV/120-59-1-1-/50

AUTHOR: Pinsker, Z. G.

TITLE: Contemporary Electron Diffraction Apparatus (A Review) (Sovremennaya elektronograficheskaya apparatura (Obzor)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 1, pp 3-16 (USSR)

ABSTRACT: This review article is divided into the following sections:
1) Problems which can be solved using contemporary electron diffraction techniques and requirements which have to be satisfied by electron diffraction apparatus.
2) The main parameters of a diffraction apparatus.
3) The EG electronograph. The EG-75 electrongraph is shown schematically in Fig.2 while a photograph of it is shown in Fig.3 In distinction to the majority of contemporary electronographs this electronograph has its axis (beam) in a horizontal position. This was found to be more useful in practice. In Fig.2 1 is the electron gun, 2 is the anticathode 5 is the electromagnetic lens 6 is the central chamber with a crystal holder and 9, 10 is the photographic part The distance between the specimen and the photographic plate (L) is 700 mm so that the electronograph can be used to obtain photographs with r_{max} = 70 mm.

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Contemporary Electron Diffraction Apparatus (A Review)

At V = 72 kv and λ = 0.043 Å this corresponds to L_λ = 30 mm/Å and d_{min} = 0.43 Å. In addition to the L = 700 mm the crystal holder can also be placed at a distance of 250 mm which is important in work on Kikuchi lines. At the present time the instrument is manufactured with only one magnetic lens. In the near future it will contain two lenses so that in separate cases it will be possible to include a second intermediate lens with a short focal distance to obtain strong preliminary focussing. Fig.4 shows the photograph of a crystal holder. Figs.6 and 10 show typical photographs obtained with this apparatus.

4) Other industrial electronographs.

5) High resolution instruments. This section includes description of Western work

6) Miscellaneous apparatus. In this section the 600 kv electronograph described by Popov (Ref.21) is mentioned. At such energies good diffraction images can be obtained with

SOV/120-59-1-1/50

Contemporary Electron Diffraction Apparatus (A Review)

Al specimens 2 μ thick and Fe specimens 0.1 μ thick. There are 13 figures, no tables and 33 references, of which 15 are Soviet, 8 German, 10 English.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography, Academy of Sciences, USSR)

SUBMITTED: October 27, 1958.

Card 3/3

SOV/2 -4-1-6/2

AUTHORS: Troitskaya, N. V. and Pinsker, Z. G.

TITLE: On the Cubic Nitride of Molybdenum (O kubicheskom nitride molibdena)

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 1, pp [illegible]-41 (USSR)

ABSTRACT: Hägg demonstrated four molybdenum nitrides (Ref 1) among them the γ-Mo N which had a face-centred cubic cell with a=4,16 A. He suggested that one N atom was at (1/2 1/2 1/2) and the others were statistically distributed at the middles of the cell edges (1/2 0, 0,1/2, 0,1/2 0, 1/2 0). The structure has been redetermined electronographically where the ratio of the atomic scattering factors is more favourable. Mo was evaporated onto freshly cleaved NaCl and nitriding was carried out with NH_3 at 750°C for 4 hours. 80-90% pre-dissociation of the ammonia gave pure γ-phase. 45 lines were found in the powder photograph and corresponded to a cell with a=4,165 A. Three dimensional line syntheses along the edge and the body diagonal of the cube were calculated and did not contradict Hägg's results. In calculating $\emptyset_{calc}$ the temperature factors (B) were

Card 1/2

On the Cubic Nitride of Molybdenum

taken as 0.2% for Mo and 0.4 for N. Dynamic corrections to the strongest reflexions were applied (Ref 3). A section in the plane 110 showed that the Mo peaks in position (0,0,0) and (1/2, 1/2, 0) were not of the same height (20% difference). Better agreement between observed and calculated intensities could be obtained if it was assumed that only 67% of the latter positions were filled by Mo. A reliability factor of 12% was reached. The N atoms at the centre of the cell edges have an effective occupancy of 1/3. The effective ratio $Z_N : Z_{Mo}$ = [illegible] 18. The Mo content is thus a little less than stoichiometric.
There are 4 figures and 6 references, 5 of which are Soviet. 1 German.

ASSOCIATION Institut kristallografii AN SSSR (Institute of Crystallography, Academy of Sciences USSR)

SUBMITTED: November 10, 1958

Card 2/2

SOV/70-4-4-13/34

AUTHORS Khitrova V.I. and Pinsker, Z.G.

TITLE An Electronographic Study of Cubic Tungsten Nitride

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 4, pp 545-553 (USSR)

ABSTRACT: The β-phase in the W-N system has hitherto been studied only with specimens containing the α-phase (nearly W). Here, specimens were prepared by heating vacuum evaporated films of W in a current of dry NH_3. To form the cubic nitride 100% pre-dissociation of the NH_3 was necessary. If the current of gas was too slow a disordered structure resulted. Nitriding took 1-2 hours at 700 °C. Electronograms showed powder patterns of the NaCl-type with a = 4.12 - 4.14 Å. These were microphotometered. The half-widths of the lines increased with $\sin\vartheta/\lambda$ as compared with an NH_4Cl standard. Fourier analysis of the line profiles was carried out for the lines 111, 200, 422 and 333. This gave the mean crystallite size in two specimens as 250 and 300 Å. Graphs of the size distributions of

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An Electronographic Study of Cubic Tungsten Nitride

crystallites in the two specimens are shown, the first having a sharp maximum at 40 Å and the second a much wider maximum at about 50 Å. The scattering curves were verified using three possible formulae, $WN_{0.5}$, $WN_{0.67}$ and WN for calculating i_T. i_{exp} was compared with i_T and a particular specimen was selected as scattering kinematically. The scattering of other specimens had an intermediate character. The heights of the potential synthesis peaks, calculated for the three models, are compared with those in the synthesis with the observed intensities. The observed value lies between the WN and $WN_{0.67}$ models. Calculated for the former model. $R = 8.6\%$ and for the latter, $R = 7.8\%$. It is concluded that the content of the light component can be found better from the Fourier synthesis than by the minimisation of R. The kinematic scattering of one specimen could be

An Electronographic Study of Cubic Tungsten Nitride

explained by the small crystallite size but it is more likely to be due to their imperfection.
There are 7 figures, 2 tables and 10 references, of which 1 is Soviet, 5 English, 2 Japanese, 1 French and 1 German.

ASSOCIATION: Institut kristallografii AN SSSR
(Institute of Crystallography of the Ac.Sc., USSR)

SUBMITTED: May 12, 1959

Card3/3

S/058/61/[illegible]/[illegible]/[illegible]
A001/A101

AUTHORS: Aliyeva, A.G., Pinsker, Z.G.

TITLE: Electronographic study of the Cu-Sb system in thin films

PERIODICAL: Referativnyy zhurnal. Fizika, no 4, 1961, 308, abstract 4E[illegible] (Uch. zap. Azerb. un-t Fiz.-matem. i khim. ser.", 1959, no [illegible], [illegible], Azerb. summary)

TEXT: Thin films of the Cu-Sb system were prepared by the Vekshinskiy method. Coating with dust was conducted in vacuum on the NaCl or celluloid backing. Dependent on conditions of dust coating, the following phases known in the Cu-Sb system were obtained: 1) α-phase, cubic, in the form of a polycrystal, 2) β-phase, tetragonal, of the Cu_2Sb composition, in the form of polycrysta. and single-crystal; 3) ε-phase, hexagonal, of the Cu_3Sb composition, in the form of polycrystal. The structure of Cu_2Sb is being examined. By the method of Fourier potential (two-dimensional section through the plane ($\frac{1}{4}$ yz), parameters of Cu and Sb atoms were determined: $Z_{Cu} = 0.268$, $Z_{Sb} = 0.299$; these values are compared with

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Electronographic study of the Cu-Sb system in thin films S/058/61/000/00[illegible]/A001/A101

the values determined by the X-ray studies: Z_{Cu} = [illegible] and Z_{Sb} = [illegible] The heights of potential peaks in atoms of Cu and Sb are analyzed.

N. Troitskaya

[Abstracter's note: Complete translation.]

Card 2/2

0.0000

AUTHOR: Pinsker, Z. G.

TITLE: Internat[illegible] E[illegible] Diff[illegible] Fedorov S[illegible]

PERIODICAL: Kristall[illegible] V[illegible], Nr [illegible]

ABSTRACT: About [illegible] including a [illegible] Soviet [illegible] scientists [illegible] part in the [illegible] sessions [illegible] the Internati[illegible] Fedorov [illegible] lography. E[illegible] with the [illegible] fraction by [illegible] scattering, and electron diffraction [illegible] applied [illegible] were discussed. [illegible] analysis based upon diffraction intensities [illegible] great interest, especially in view of the [illegible] ries developed by H. Bethe, C. H. MacGillavry, M.

Card 1/3

International Panel on E[illegible] Diffra[illegible]
at the Fedorov Session [illegible]

[illegible]
SOV [illegible]

Blackman, and B. K. Vaynshteyn. From [illegible] Soviet crystallographers, B. K. Vaynshteyn, S. A. Semiletov, B. B. Zvyagin, and Z. G. Pinsker [illegible] new data on both the development of new [illegible] and newly studied crystals. The data was [illegible] them [illegible] with V. P. Dvoryanki[illegible], M. M. Stasovi, A. N. [illegible], V. I. K[illegible], N. V. Troitskiy, and [illegible] D[illegible], N. M. P[illegible] on electron diffraction studies at appli[illegible] L. S. Pal[illegible] on [illegible] alloys, and P. A. Akishin, N. I. Ramboldi, and V. P. Spiridonov on molecular [illegible] vapors at [illegible] temperatures. From among the U.S. crystallographers, L. O. Brockway, and V. Schomaker presented [illegible] prepared in cooperation with R. Glauber, I. A. [illegible], and I. A. Ibers, on the contemporary state of [illegible] diffraction studies, on new equipment and newly studied compounds which altered some of the earlier concepts. L. S. Bartne[illegible] and R. A. Bonham reported on interatomic bonds in some organic compounds. The other reports were presented by [illegible] Japanese, [illegible] German, 2 Australian, 1 French, and 2 Norwegian crystallographers.

Card 2/3

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PINSKER, Z.G.

Some results of electron diffraction studies of the structure of semiconductors. Zhur. strukt. khim. 1 no.2:238-251 Jl-Ag '60. (MIRA 13:9)

1. Institut kristallografii AN SSSR.
(Semiconductors)

LU SEN-DZHUN; PINSKER, Z.G.

Electron-diffraction study of the system Ag -Sb in thin films.
Kristallografiia 5 no.2:228-232 Mr-Ap '60. (MIRA 13:9)

1. Institut kristallografii AN SSSR.
(Silver) (Antimony)

DVORYANKINA, G.G.; PINSKER, Z.G.

Ordering in the nitride phases of iron. Kristallografiia 5 no.2:253-256 Mr-Ap '60. (MIRA 13:9)

1. Institut kristallografii AN SSSR i Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR.
(Iron nitride)

82508

S/0 0/60/005/004/008/012

15 2220 E132/E360

AUTHORS: Butorina, L.N. and Pinsker, Z.G.

TITLE: An Electron Diffraction Study of W_2C

PERIODICAL: Kristallografiya, 1960, Vol. 5, No. 4, pp. 585 - 590 + 1 plate

TEXT: The structure of the compound W_2C has been determined earlier and belongs to the CdI_2 type with space group D [illegible]. However, a variety of parameters have been given for the W atom and the position of the C atoms was only inferred from the packing. Specimens of W_2C were here obtained by cementation in CO (obtained by the decomposition of formic acid) of metallic films of W condensed on crystals of NaCl on Pt grids. W_2C was obtained at a temperature of cementation of 1100 °C in [illegible] in [illegible] minutes. Electronograms from polycrystalline films gave a = 2.9[illegible] and c = 4.71 Å. No extinctions were observed and 71 reflexions could be indexed. Intensities were estimated by photometering the plates. The three-dimensional Patterson Harker section at 110 was calculated to give the z parameter of the W at[illegible] [illegible] 0.[illegible]. In [illegible] the [illegible]

Card 1/[illegible]

/070/ 67/007/003/006/00.
E1 /E 90

An Electron Diffraction Study of W_2C

intensities ... For all ... reflexions ... reliability factor R ... was ... No deviation of the W ... its ideal position was detected. A Fourier ... section at 110 was calculated and the C atoms were visible with ... 1.00 V ... W). There are ... figures ... tables and ... references: 1 French, ... German, 1 international and ... Soviet.

ASSOCIATION: ... State University ... Research ... Physics ... State University im. N.I. Lobachevskiy

SUBMITTED: April ... 1960

Card ... /2

PINSKER, Z.G.

Disordered structures and ordering processes. Kristallografiia 5 no.4:627-637 Jl-Ag '60. (MIRA 13:9)

1. Institut kristallografii AN SSSR.
(Crystal lattices)

84120

S/070/60/005/005/005/017
E132/E360

15 2220

AUTHOR: Khitrova, V.I. and Pinsker, Z.G.

TITLE The Production and Investigation of the Structure II of the Hexagonal Nitride of Tungsten

PERIODICAL Kristallografiya, 1960, Vol. 5, No. 5, pp. 711 - 717

TEXT Tungsten nitride has a hexagonal cell with a = 2.89 Å and with various values of c, c = 15.5 has been reported by the present authors (idem. Vol.3, 545 and Vol. 4, 545), but the form with c = 22.85 Å has been studied here. It was obtained by heating thin films of W in NH_3 (rapid stream) at 780 deg. Oblique texture electronographs were obtained from them. The rhombohedral extinctions were very clearly defined. The reflexions were photometered. Patterson and Fourier syntheses gave the structure and the parameters were determined more exactly from line sections parallel to z, and by difference syntheses. The W atoms lie in the positions 2(c) at $0.0.z_1$ with $z_1 = 0.0007$, 2(d) at $1/3.\ 2/3\ z_2$, with $z_2 = 1/3 - z_1$ and $z_3 = 1/3 + z_1$, N atoms lie at 1(d)

Card1/3

S/070/60/005/005/005/017
E132/E360

The Production and Investigation of the Structure II of the Hexagonal Nitride of Tungsten

0.0,1/2 and 2(d) 1/3, 2/3, z with z 0.154. The space group is C3. The characteristic of the structure is its friability. The interatomic distances W N vary within the limits of 2.80-3.03, which is significantly greater than the sum of the atomic radii. This is connected with the lability of the phase. The coordination number of each W atom is 10. For N atoms the coordination number is 12 and the polyhedron is a distorted cubo-octahedron. Hexagonal layer-packets of W atoms are distributed parallel to the basal plane at distances of 4.29 from each other. W atoms in neighbouring packets are distributed with the rhombohedral motif 0.0 1/3 2/3 2/3, 1/3. In one c-period there are three such packets. Between the packets layers of N atoms are distributed forming in their own planes similar hexagonal nets.

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84120

S/070/60/005/005/00?/01
E132/E360

The Production and Investigation of the Structure I[illegible]
Hexagonal Nitride of Tungsten

There are 11 figures, 2 tables and 7 references 6 Soviet and 1 international

ASSOCIATION Institut kristallografii AN SSSR (Institute of Crystallography of the AS USSR)

SUBMITTED May 27 1960

Card 3/3

80055
S/020/60/132/01/29/064
B014/B014

24.7200

AUTHORS: Dvoryankina, G.G., Pinsker, Z.G.

TITLE: Electron Diffraction Study of Fe_3O_4

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 1, pp. 110-113

TEXT: First, the authors refer to papers (Refs. 1-6) in which the structure of magnetite was found to be an "inverse" spinel. This model offers a good explanation for its electric and magnetic properties. The oxygen parameter u, which equals 0.375 in the case of a perfect spinel, has hitherto not been determined. The present paper is intended to study the structure of Fe_3O_4 by electron diffraction studies on thin layers. The preliminary treatment of Fe_3O_4 samples is briefly described. The electron diffraction pictures taken on three polycrystal samples show that the lattice constant is 8.40 ± 0.01 A. The photometric determination of the intensity of 74 lines, corresponding to 153 reflections, permits a comparison between Φ_{theor} and Φ_{exp}. The introduction of a dynamic correction was found to be necessary. A comparison between Φ_{theor}

Card 1/3

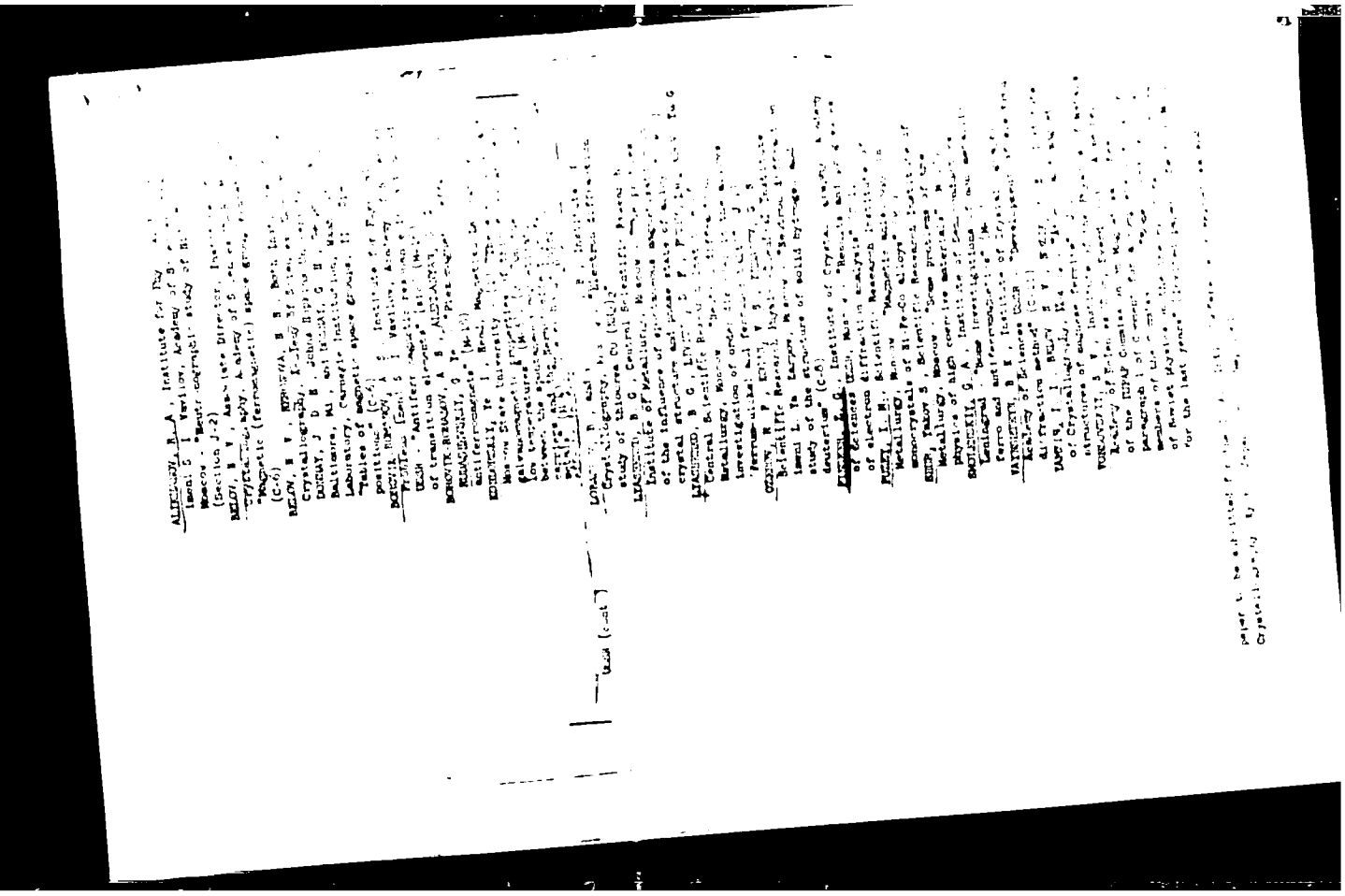
Electron Diffraction Study of Fe_3O_4

S/020/60/132/01/29/064
B014/B014

and Φ_{exp} after the introduction of the correction yielded a divergence factor of R = 18.5%. For the following studies the authors used samples with kinematic (functional) dispersion, which permitted a more objective determination of the parameter u. 16 reflections were used to determine the oxygen parameter u, and a very small factor, R = 11.7%, was obtained for u = 0.263. An oxygen parameter u = 0.258 ± 0.002 is finally obtained by minimizing the factor R. Good agreement between the individual values of the above-mentioned parameter was obtained by calculating the spacings between the O^{2-} ions and the adjacent iron ions in tetrahedral and octahedral positions for the parameter u = 0.258 as well as by a comparison with the sums of ionic radii according to Pauling (Ref. 7). There are 1 figure and 18 references, 4 of which are Soviet.

ASSOCIATION: Institut kristallografii Akademii nauk SSSR (Institute of Crystallography of the Academy of Sciences of the USSR) Institut neorganicheskoy khimii Sibirskogo otdeleniya Akademii nauk SSSR (Institute of Inorganic Chemistry of the Siberian Branch of the Academy of Sciences of the USSR)

PRESENTED: December 29, 1959, by N.V. Belov, Academician



ALIYEVA, A.G.; PINSKER, Z.G.

Electron diffraction study of the phase structure of the composition Cu_3SbS_4. Kristallografiia 6 no.2:204-209 Mr-Ap '61. (MIRA 14:9)

1. Azerbaydzhanskiy gosudarstvennyy universitet im. S.M.Kirova i Institut kristallografii AN SSSR.

(Electron diffraction examination) (Famatinite crystals) (Phase rule and equilibrium)

VAYNSHTEYN, B.K.; PINSKER, Z.G.; LOBACHEV, A.N.; ZVYAGIN, B.B.

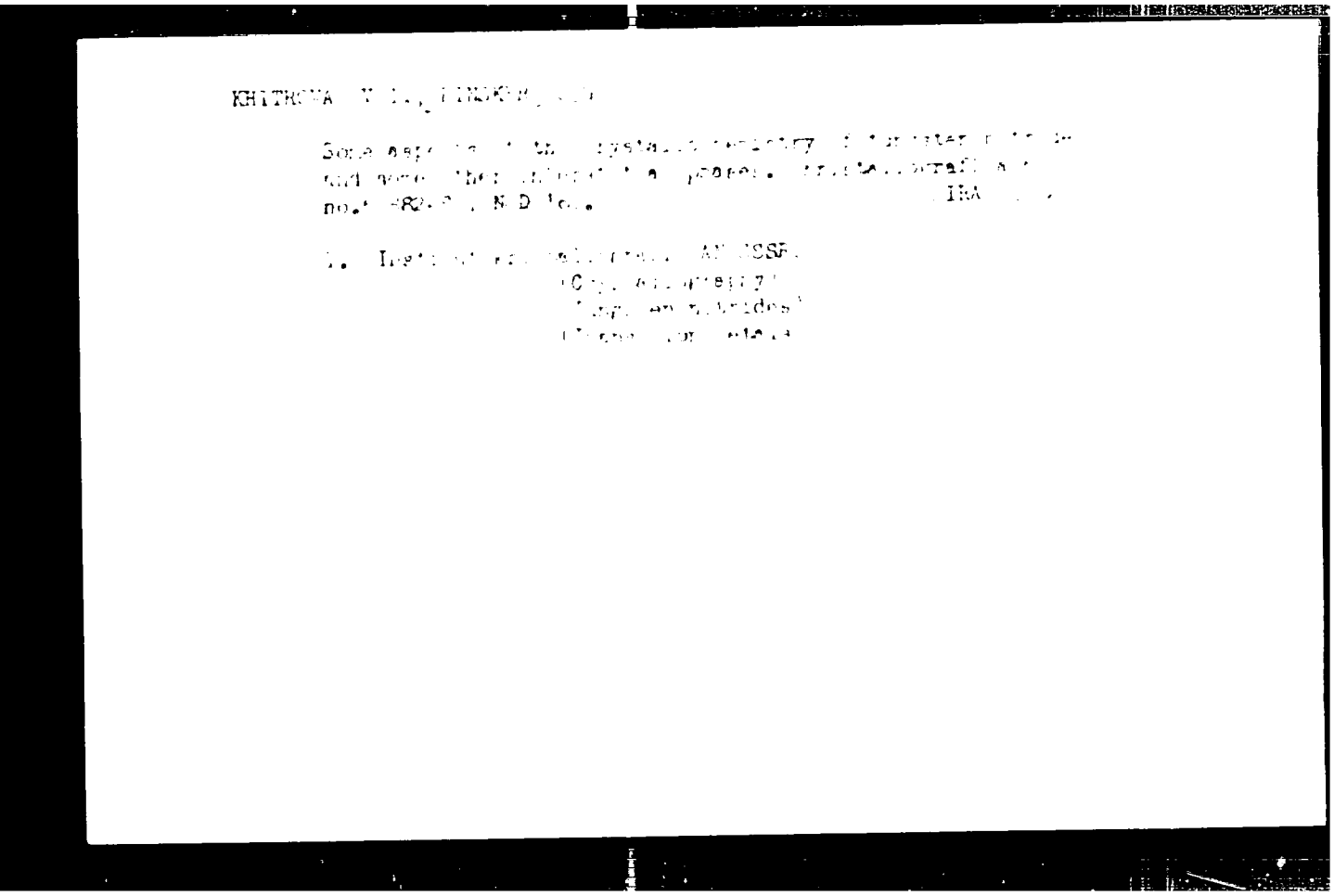
Important problems in the theory of modern electron-diffraction structure study; survey. Zav.lab. 27 no.6:673-682 '61. (MIRA 14:6)

(Electron diffraction examination)

CHZHOU TSZIN-LYAN [Chou Chin-liang]; IMAMOV, R.M.; PINSKER, Z.G.

Electron diffraction study of the system Ag - Te in thin layers. Kristallografiia 6 no.5:772-773 S-O '61. (MIRA 14:10)

1. Institut kristallografii AN SSSR.
(Electron diffraction examination) (Silver) (Tellurium)



CHZHOU TSZIN-LYAN [Chou Ching-liang]; PINSKER, Z.G.

Electron diffraction examination of the system Ag - Sc ... thin films. Kristallografiia 7 no.1:66-71 Ja-F '62. (MIRA 15:2)

1. Institut kristallografii AN SSSR.
(Electron diffraction examination)
(System (Chemistry))

/070/62/007/003/019/026
E132/E460

AUTHORS: Dvoryankina, G.G., Pinsker, Z.G.

TITLE: Investigation of the structures of phases in the system Ni-Te in thin layers

PERIODICAL: Kristallografiya, v.7, no.3, 1962, 458-461

TEXT: An electron diffraction study has been made of Ni-Te alloys in the composition region of 50 to 66.7% Te. Thin films were prepared by vacuum evaporation from two sources onto a crystal of NaCl followed by annealing at 250 to 300°C for 3 to 10 hours. Because of the distance between the sources the composition of the film changes from pure Ni at one end to pure Te at the other. Many electronograms were recorded. Four electrograms were then chosen for photometry and detailed study. The hexagonal cell dimensions were between a = 3.88 with c = 5.31 and a = 3.95 with c = 5.40 Å. Patterson and Fourier lines (00z) were constructed for each and the peak heights were estimated. Near the 50% composition a complex superstructure was present besides the phase of composition $Ni_{1+x}Te_2$, where x is between 0 and 1, which had the CdI_2 structure. In the latter, because of the difference

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in composition from $NiTe_2$, the parameter must differ from 0.25. For the specimen with the smallest cell (quoted) z_{Te} was found to be 0.253 (here the R factor was 19%). This gives distances Te-Te = 3.44 Å and Ni-Te = 2.51 Å. There are 5 figures.

ASSOCIATIONS: Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR (Institute of Inorganic Chemistry of the Siberian Branch AS USSR)
Institut kristallografii AN SSSR (Institute of Crystallography AS USSR)

SUBMITTED: September 25, 1961

PINSKER, Z. G.

"Electron-diffraction investigation of two- and three-component phases in thin films."

report submitted for 6th Gen Assembly, Intl Union of Crystallography, Rome, 9 Sep 63.

Inst Crystallography, AS USSR, Moscow.

PINSKER, Z. G.

"Fundamentals of Diffraction Methods of Studying Perfect Crystals." report presented at the 3rd Conference of Higher Educational Institutes on Strength and Plasticity of Metals, Petrozavodsk State University, 24-29 June 1963.

by Z. G. Pinskor ("Basis of diffractional methods of investigation of perfect crystals"), B. M. Rovinskiy and L. M. Ryoakova ("Investigation of dependence of mechanical properties on characteristics of structure of metals"-), L. M. Utovskiy and P. M. Usikov ("Application of microscopy in investigation of structure of alloys"), A. A. Predvoditelev and N. A. Tyapunina ("Role of reproduction of dislocations in process of plastic flow"), A. V. Pertsov, N. V. Pertsov and E. D. Shukin "Self-producing internal dispersion of metals under action of strongly superficially-active metallic melting") and I. L. Mirkin ("Problems of structural investigations, advanced by requirements of progress of technology").

re orts presented at the 3rd Intervuz Conference on Strength and Ductility of Metals, Petrozavodsk State University, 24-29 June 1963.
(reported in Fizika Metallov i Metallovedeniye, Vol. 16, No. 4, 1963, p 640.
JPRS 24,651 19 May 1964.

UDALOVA, V.V.; [illegible], ..G.

Electron diffraction examination of the structure of ammonium sulfate. Kristallografiia 8 no.4:53[illegible]-54[illegible] Jl-Ag '63. (MI[illegible])

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova i Institut kristallografii AN SSSR.
(Ammonium sulfate crystals) (Electron diffraction examination)

L 19458-63 EWP(q)/EWT(m)/BDS/EWP(b) AFFTC/ASD JD

ACCESSION NR: AP3004093 S/0070/63/008/004/0548/0555

AUTHORS: Troitskaya, N. V.; Pinsker, Z. G.

TITLE: Electron-diffraction study of superlattice in MoN

SOURCE: Kristallografiya, v. 8, no. 4, 1963, 548-555

TOPIC TAGS: electron diffraction, superlattice, Mo, N, hexagonal system, defective atom, density, space group, prismatic coordination, octahedron

ABSTRACT: The structure of a new hexagonal nitride of molybdenum has been studied in thin films. It was prepared by the method described by Z. G. Pinsker, S. V. Kaverin, and N. V. Troitskaya (Kristallografiya, 2, 1, 179, 1957). It has parameters of a = 2.86 and c = 11.20 Å. The space group has been determined as D_{6h}^4 and the positions of the atoms as Mo: 2(a) and 2(b), N: 4(f) with z = 0.125. The position of Mo 2(a) is defective. The structure was found to consist of alternating defective (position 2(a)) and nondefective (position 2(b)) layers of Mo atoms. Defective atoms of Mo were found at centers of distorted octahedrons consisting of N atoms, while nondefective atoms of Mo were found with prismatic

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L 19458-63
ACCESSION NR: AP3004093

coordination relative to N atoms. The interatomic distances were found to be the same in both instances. Atoms of N were found in the centers of trigonal prisms consisting of Mo atoms. The possible limits of composition of this nitride range from $Mo_{0.82}N$ to $Mo_{0.85}N$. The theoretical density is 7.90 g/cm^3. Orig. art. has: 6 figures and 4 tables.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography, Academy of Sciences, SSSR)

SUBMITTED: 20Mar63 DATE ACQ: 15Aug63 ENCL: 00

SUB CODE: [illegible] NO REF SOV: 009 OTHER: 004

Card 2/2

L 19459-63 EWP(q)/EWT(m)/EWP(B)/bDS AFFTC/ASD Pad RDW/JD/HW
ACCESSION NR: AF3004094 S/0070/63/008/004/0556/0560

AUTHORS: Dvoryankina, G. G.; Pinsker, Z. G.

TITLE: Investigation of the phase structures in the system Ni-Te in thin layers. Investigation of the Beta-phase of NiTe

SOURCE: Kristallografiya, v. 8, no. 4, 1963, 556-560

TOPIC TAGS: structure, phase, Beta-phase, Ni, Te, order, disorder, lattice, electron diffraction

ABSTRACT: This work is based on electron diffraction studies of one phase in the system Ni-Te, found within a region recent investigations by the authors indicated to be homogeneous (Kristallografiya, 7, 3, 458-461, 1962). Two structures of the Beta-phase in the system NiTe have been discovered. Structure I was determined by the method of Φ' and the Φ -series. The lattice parameters are: a_o = 3.88 Å; c_o = 20.2 Å; space group D^5_{3d}; Z - 6 for the ideal composition NiTe; Te and Ni atoms occupy the position 6(c) when z_{Te} = 0.257 ± 0.002 and z_{Ni} = 0.129 ± 0.002. The atomic arrangement in planes parallel to the base is only partly ordered. It should be noted that the phase transition between the two structures is unusual and

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L 19459-63
ACCESSION NR: AP3004094

cannot be referred to transitions of the order-disorder type. Structure II has a period of $a = a_0\sqrt{3}$ and has an ordered arrangement of atoms in the basal planes, but strict periodicity along the c axis is disturbed. The composition of the Beta-phase is near $Ni_4(Ni_2Te_4)$ or Ni_3Te_2. It is possible that this phase exists only in films (all earlier studies were made on powders). Orig. art. has: 6 figures.

ASSOCIATION: Institut neorganicheskoy khimii SO AN SSSR (Institute of Inorganic Chemistry, Siberian Department, Academy of Sciences, SSSR); Institut kristallografii AN SSSR (Institute of Crystallography, Academy of Sciences, SSSR)

SUBMITTED: 04Apr63 DATE ACQ: 15Aug63 ENCL: 00

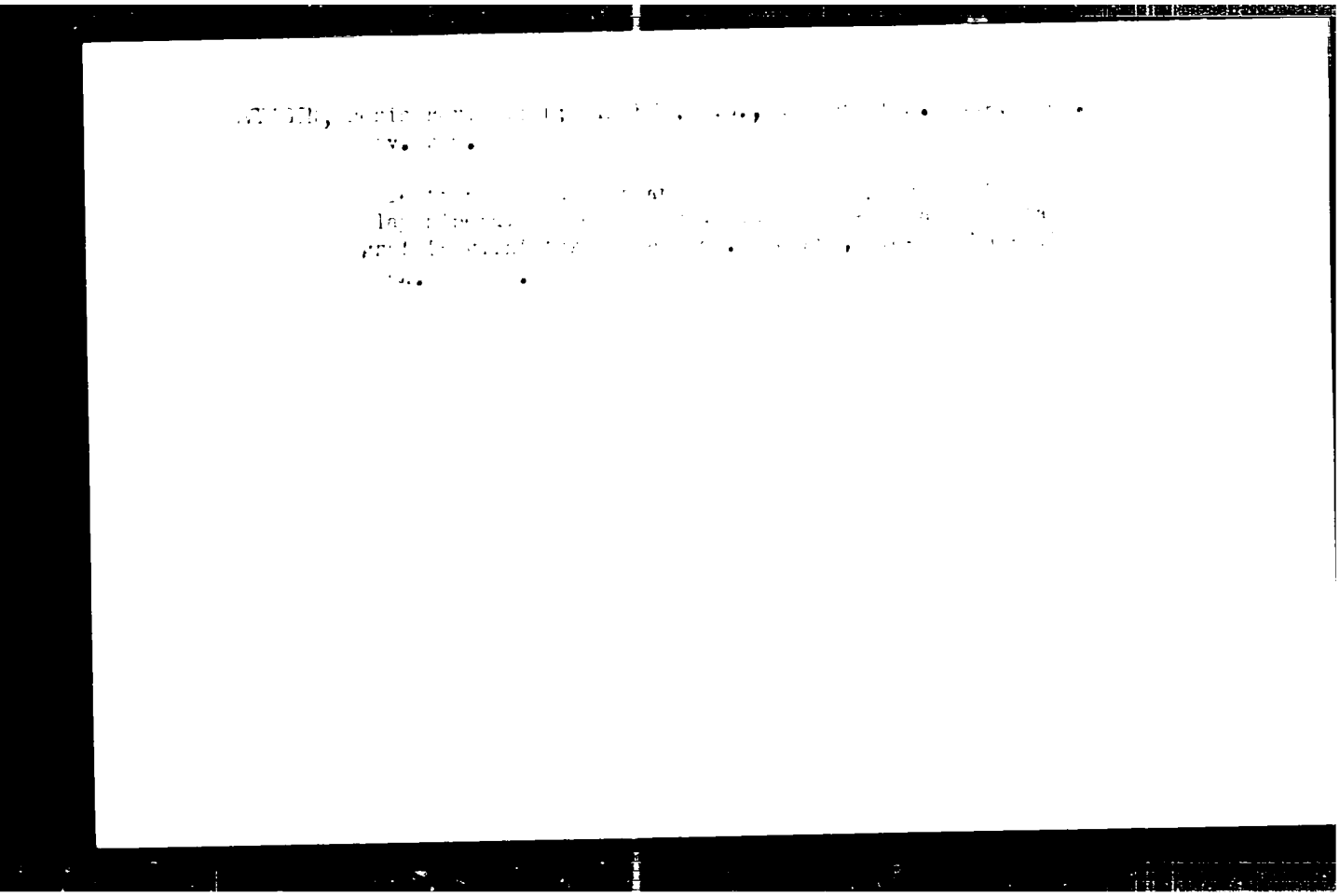
SUB CODE: PH NO REF SOV: 001 OTHER: 003

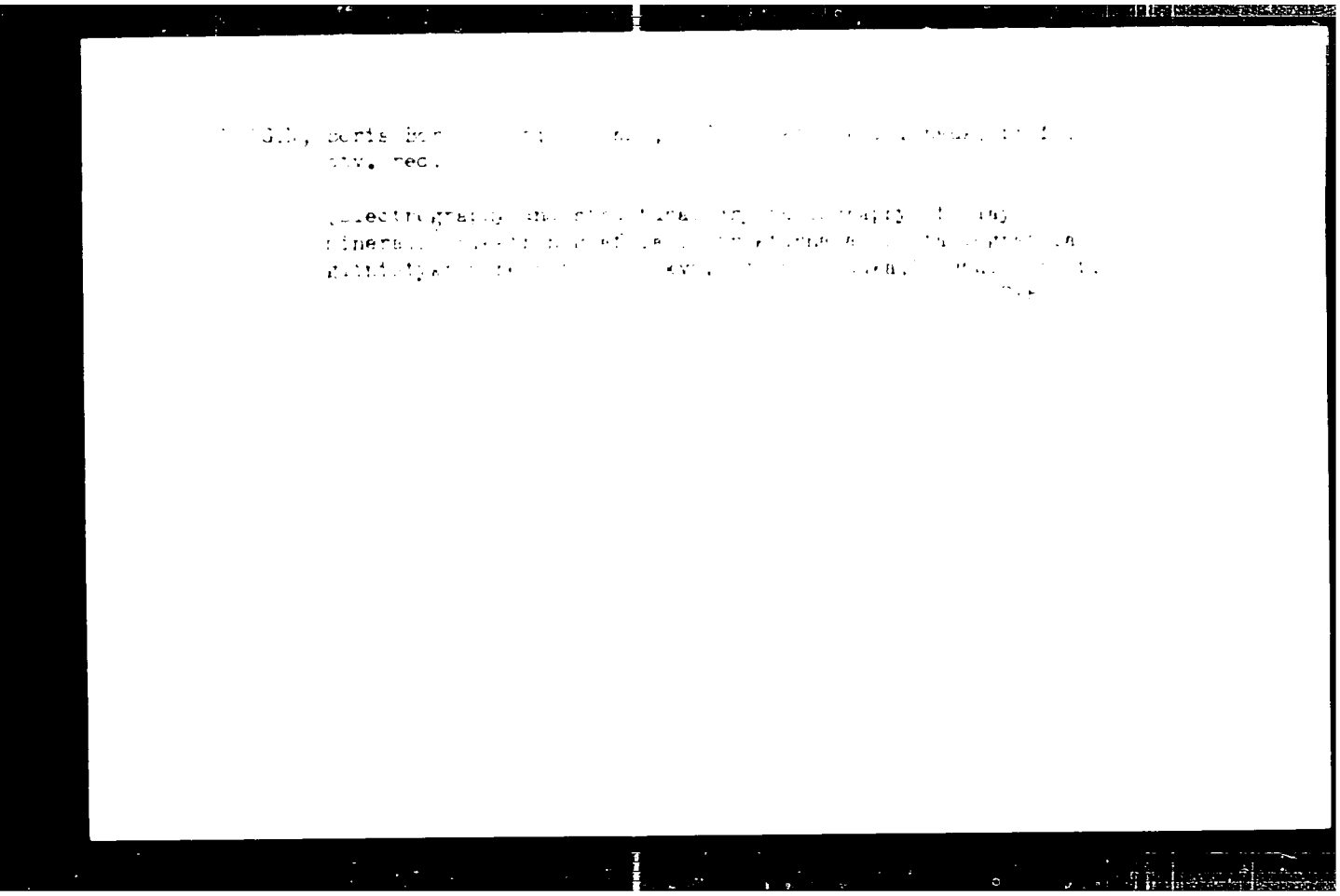
Card 2/2

DVORYANKINA G.G.; [illegible], Z.G.

Study of the phase structure of the system Ni - Te in thin films and the β-phase of NiTe. Kristallografiia 8 no.4:556-560 Jl-Ag '63. (MIRA 16:6)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR i Institut kristallografii AN SSSR.
(Nickel telluride crystals) (Electron diffraction examination)





HINSKER, A. I.

ZHUKOVA, L.A.; PINSKER, Z.G.

Electron diffraction study of the structure of potassium bichromate. Kristallografiia 9 no.1:44-47 Ja-F '64. (MIRA 17:3)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova i Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti.

ACCESSION NR: AP4012281 S/0070/64/009/001/0104/0106

AUTHORS: Baranova, R. V.; Pinsker, Z. G.

TITLE: Investigation of the system Cu-Te in thin films

SOURCE: Kristallografiya, v. 9, no. 1, 1964, 104-106

TOPIC TAGS: Cu Te system, thin film, x-ray data, phase structure, lattice constant, beta sup I phase, beta sup II phase, beta sup III phase

ABSTRACT: Thin films of the Cu-Te system have been investigated in order to verify and to complete the existing crystallographic data on this material. The films were produced by vacuum sublimation of Cu and Te from the surfaces of previously heat-treated nalite crystals at room temperature. After their deposition the films were held at various temperatures for various periods of time. Photographs taken obliquely to the molecular beam made it possible to determine the lattice constant as a = 3.10, b = 4.02, c = 6.86 Å. Films with high Cu, when heated for 2 hours at 100C, were found to contain (aside from CuTe) the hexagonal phases β^{I}, β^{II}, and β^{III}. The values of lattice constants for these phases are close to the whole multiples of a_o = 4.24 and c_o = 7.29 Å (β^{I}--$2a_o$ and c_o; β^{II}--$2a_o$ and $3c_o$; β^{III}--$2a_o$ and $5c_o$). No phase with constants a_o and c_o was found. A study of the rhombic

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ACCESSION NR: AP4012281

phase produced exact values of $z_{Te} = 0.223$, $z_{Cu} = 0.449$. These experiments did not confirm the results presented by H. Nowotny (Z. Metallkunde, 37, 40-42, 1946). The study of phase structure is being confirmed. Ye. Ye. Malitskiy participated in this work. Orig. art. has: 2 electronograms and 3 graphs.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography AN SSSR)

SUBMITTED: 23Mar63 DATE ACQ: 19Feb64 ENCL: 00

SUB CODE: PH NO REF SOV: 001 OTHER: 003

Card 2/2

ACCESSION NR: AP4039394 S/0070/64/009/003/0347/0351

AUTHORS: Pinsker, Z. G.; Imamov, R. M.

TITLE: Electron diffraction investigation of the compound $AgBiTe_2$

SOURCE: Kristallografiya, v. 9, no. 3, 1964, 347-351

TOPIC TAGS: electron diffraction study, telluride compound, thin film, crystal lattice structure

ABSTRACT: Samples were obtained by volatization of fused $AgBiTe_2$ in a vacuum (10^{-4} mm Hg) and deposited in thin films on a fresh cleavage face of rock salt. Slow sputtering on a backing at room temperature gave rise to an amorphous film. A crystalline film was obtained by rapid sputtering, by heating the amorphous film, or by sputtering on hot crystals of NaCl. Electron diffraction patterns were obtained for polycrystalline material, laminated material, and single mosaic crystals. Both cubic and hexagonal modifications were identified. The cubic phase has NaCl structure, with $a = 6.16 \pm 0.02$ Å. The hexagonal phase shows ordered arrangement of Ag and Bi in the space group D_{3d}^5, $a = 4.24$ Å and $c = 20.67$ Å. The twelve atoms of

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ACCESSION NR: AP4039394

the space group are arranged with 3 Ag in the (a) position, 3 Bi in the (b) position, and 6 Te in the (c) position. The diffraction diagrams show that the $\{10\bar{1}4\}$ planes of the hexagonal phase correspond to the $\{100\}$ planes of the cubic phase. This means that hexagonal crystallites are disposed with the $(10\bar{1}4)$ face parallel to the face of the cube. The unit cell dimensions fulfill rather closely the relation $a_{hex} = a_{cub}/\sqrt{2}$ and $c_{hex} = 2a_{cub}/\sqrt{3}$. In this relation the hexagonal $[0001]$ is parallel to the cubic $[111]$, $[10\bar{1}0]$ to $[1\bar{1}0]$, and $[01\bar{1}0]$ to $[0\bar{1}1]$. In both ordered and disordered structures the atoms preserve an octahedral coordination, but the ordered structure is accompanied merely by an appropriate distribution (redistribution) of Ag and Bi atoms in the densest cubic packing of Te atoms. Orig. art. has: 4 figures and 1 table.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography, AN SSSR)

SUBMITTED: 19Nov63 ENCL: 00

SUB CODE: SS NO REF SOV: 003 OTHER: 002

Card 2/2

ACCESSION NR: AP4039402

S/0070/64/009/003/0413/0415

AUTHORS: Pinsker, Z. G.; Inamov, R. M.

TITLE: The growth and investigation of thin cuprous oxide films

SOURCE: Kristallografiya, v. 9, no. 3, 1964, 413-415

TOPIC TAGS: cuprous oxide, thin film, electron diffraction, Fermi level, defective phase

ABSTRACT: The authors grow Cu_2O films by two different methods: 1) by volatization of Cu wire in a vacuum (10^{-4} mm Hg) with subsequent condensation on fresh cleavage faces of rock salt, the material then being placed in a thermostatically controlled furnace and heated at different temperatures; and 2) by volatization of Cu wire under the same conditions, but with subsequent heating at pressures on the order of 0.5 mm Hg and at a temperature of 200C for 2 hours. Electron diffraction patterns of films obtained by the first method (at a temperature of 125C for 10 minutes) show Cu_2O + Cu. Increase in duration of heating yields pure Cu_2O. Films heated at 160-170C for 20 minutes also yield Cu_2O. On further heating, both Cu_2O and CuO appear. Electron diffraction patterns of films obtained

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ACCESSION NR: AP4039402

by the second method show polycrystalline structure. The rings on the electron diffraction photographs are sharp. The interplanar distance for the last visible ring is 0.552 Å. The lattice constant, determined from these photographs, is a = 4.250 ± 0.005 Å. A comparison of computed and experimental values of the Fermi level reveals that the scattering is partly dynamic. The difference between the computed and experimental values is apparently due to partial replacement by atoms of oxygen. The authors conclude that the compound Cu_2O is a defective phase. Orig. art. has: 1 table.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography AN SSSR)

SUBMITTED: 18Oct63 ENCL: 00

SUB CODE: EC, SS NO REF SOV: 002 OTHER: 004

Card 2/2

ACCESSION NR AP4043191 S/0070/64/009/004/0556/0557

AUTHORS: Pinsker, Z. G.; Imamov, R. M.

TITLE: Electron diffraction study of the compound $AgSbTe_2$

SOURCE: Kristallografiya, v. 9, no. 4, 1964, 556-557

TOPIC TAGS: electron diffraction, silver compound, diffraction pattern, diffraction analysis, thin film, crystal structure analysis

ABSTRACT: The samples of $AgSbTe_2$ were prepared by fast evaporation in vacuum (10^{-4} mm Hg) onto rock salt crystals kept at room temperature. The resulting amorphous films became crystalline upon annealing. Films annealed at 100--110C for 1.5--2 hours gave electron diffraction patterns which could be indexed on the basis of a cubic face-centered unit cell with a = 6.03 Å -- in good agreement with the literature. On increasing the temperature and the annealing time

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ACCESSION NR: AP4043191

there appeared, in addition to the cubic phase, reflections due to the monoclinic modification of Ag_2Te whose intensities increased with annealing temperature, pure Ag_2Te patterns being obtained at 300C. Cubic $AgSbTe_2$ is thus stable in thin films at 100--110C, decomposes at higher temperatures in accordance with

$$2AgSbTe_2 \rightarrow Ag_2Te + SbTe_3,$$

and it can be assumed that the $SbTe_3$ sublimes at 300C. Even a simple analysis of the 40 observed independent $AgSbTe_2$ reflections indicates an NaCl-type structure in which, from space group considerations, the Ag and Sb atoms must be distributed statistically. Structure factors were obtained from the formula

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ACCESSION NR: AP4043191

$$\Phi^2_{hk\ell} = I_{meas}/p\, d_{hk0} d_{hk\ell}.$$

The intensities were read visually and with the aid of a microphotometer. The theoretical structure factors were calculated from the same ordering model as for $AgSbSe_2$. For a temperature factor B_{av} = = 1.5 $Å^2$ the discrepancy factor for all 40 reflections amounted to 33.9%; after applying the dynamical correction it decreased to 12.8%. $\Phi_{hk\ell}$ with odd indices were found to be systematically more intense than the calculated ones. The peaks of the potential along a (110) section for Ag + Sb (1075 V) were lower than the theoretical value (1180 V), while for Te (1220 V) they practically coincided with the theoretical value (1230 V). Defects in the positions of Ag + Sb are unlikely in view of the constant lattice parameters obtained from different samples, although this is not entirely unambiguous. Annealing of films at 100C for 40 hours did not yield new ordered

Cord 3/4

ACCESSION NR: AP4043191

phases. Orig. art. has: 2 formulas.

ASSOCIATION: Institut Kristallografii AN SSSR (Institute of Crystallography, AN SSSR)

SUBMITTED: 18Oct63 ENCL: 00

SUB CODE: SS NR REF SOV: 001 OTHER: 003

Card 4/4

L 11269-65 EWT(1)/EWD(k)/EWT(m)/T/EWP(b) Pz-6 IJP(c)/ASD(a)-5/AFWL/ESD(t)/
ESD(dp) JD/RDW/AT

ACCESSION NR: AP4046051 S/0070/64/009/005/0743/0747

AUTHORS: Imanov, R. M.; Pinsker, Z. G.

TITLE: Electron diffraction investigations of the semiconductor compound $AgTlTe_2$

SOURCE: Kristallografiya, v. 9, no. 5, 1964, 743-747

TOPIC TAGS: silver compound, semiconductor material, electron diffraction study, thin film, single crystal, polycrystal

ABSTRACT: The samples for the investigation were prepared in the form of thin films by sublimating a previously-prepared alloy in vacuum. The substrates used for the condensation were celluloid films and rock-salt crystals, either at room temperature or heated to a definite temperature. The condensation on substrates at room temperature was always accompanied by formation of amorphous films. The crystals were obtained only by condensation on rock salt heated

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L 11269-65
ACCESSION NR: AP4046051

to a definite temperature. Different types of electron diffraction patterns were obtained at different temperatures. To identify the given phase of the film it was necessary to determine the experimental intensities of the reflections on the electron diffraction patterns. Examination of these patterns has shown that in some cases the $AgTlTe_2$ film is produced with a structure of a mosaic single crystal, and in other cases a polycrystalline phase was obtained. No chalcopyrite phase could be observed. Orig. art. has: 7 figures and 1 table.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography AN SSSR)

SUBMITTED: 04Apr64 ENCL: 00

SUB CODE: SS NR REF SOV: 002 OTHER: 001

Card 2/2

L 16585-65 EWT(l)/EWT(m)/EWP(j)/T/EWP(t)/EEC(b)-2/EWP(b) Po-4 IJP(c)/ESD(t)/ESD(dp)/AFWL/ASD(a)-5 RDW/JD/RM

ACCESSION NR: AP5000288 S/0070/64/009/006/0853/0856

AUTHORS: Imamov, R. M.; Pinsker, Z. G.; Ivchenko, A. I.

TITLE: Determination of the crystal structure of $SuSbSe_2$

SOURCE: Kristallografiya, v. 9, no. 6, 1964, 853-856

TOPIC TAGS: copper compound, semiconductor material, crystal structure, thin film, ordered structure

ABSTRACT: The structure of the semiconductor compound $CuSbSe_3$ in thin film form, for which no disordered phase was observed, was investigated. The structure of the compound was found to be that of a rhombic unit cell with periods a = 6.40, b = 3.95, and c = 15.33 Å with four $CuSbSe_2$ "molecules" per unit cell. The extinctions observed on the electron diffraction patterns identify uniquely the space group as D_{2h}^{16}--Pnma, with the following atomic positions:

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ACCESSION NR: AP5000288

4Cu : 4(e) o z = 0,738, z = 0,175;
4Sb : 4(e) o z = 0,225, z = 0,063;
4Se$_I$: 4(e) o z = 0,652, z = 0,097;
4Se$_{II}$: 4(e) o z = 0,118, z = 0,176.

The accuracy of the atomic parameters was found to be 0.006, 0.005, and 0.004 Å for Cu, Se, and Sb, respectively. The interatomic distances obtained for the structure agree with those obtained for other compounds and indicate that the bond between Cu and Se is essentially covalent. Orig. art. has: 3 figures and 2 tables.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography, AN SSSR)

SUBMITTED: 18Dec63 ENCL: 00

SUB CODE: SS NR REF SOV: 003 OTHER: 003

Card 2/2

L 16582-65 EWG(j)/EWT(l)/EWT(m)/EPF(c)/EPR/T/EWP(t)/EEC(b)-2/EWP(b) Pr-4/Ps-4
IJP(c)/ESD(dp)/ESD(t)/AFWL/ASD(a)-5/AS(mp)-2 JD/GG

ACCESSION NR: AP5000289 S/0070/64/009/006/0857/0863

AUTHORS: Zav'yalova, A. A.; Imanov, R. M.; Pinsker, Z. G. B

TITLE: Electron diffraction investigation of the Bi--O system in thin layers

SOURCE: Kristallografiya, v. 9, no. 6, 1964, 857-863

TOPIC TAGS: electron diffraction, bismuth inorganic compound, thin film, phase analysis

ABSTRACT: An electron diffraction study was made of the Bi-O system in films prepared by two procedures. In the first Bi_2O_3 was sublimated in vacuum of 5×10^{-5} mm Hg on the cleavage face of NaCl at various temperatures from room temperature to 350C, and with varying evaporation rates. The second method consisted of sublimating metallic bismuth (either analytically or spectrally pure) at 5×10^{-5} mm Hg on the cleavage face of NaCl. The produced films

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were oxidized in air by slow heating in a muffle oven (heating to 450--470C for 5--22 hours). The electron diffraction patterns obtained by the first method were mixtures of phases and difficult to index, but electron diffraction patterns of a single phase could be obtained by the second method. The results show the existence of a tetragonal phase with composition $Bi_2O_{2.7--2.8}$ with lattice periods $a = 3.85 \pm 0.02$, $c = 12.25 \pm 0.05$ Å. The space group is D_{4h}^{17}--I4/mmm. The atoms occupy the following positions: $2Bi_I$--2(a), $2Bi_{II}$--4(e)z = = 0.32 ; 5.40--8(g)z = 0.125. The electron diffraction dot patterns were indexed and showed that the $Bi_2O_{2.7--2.8}$ crystals are oriented with (001) and (011) faces parallel to the face of the NaCl cube.
"The authors thank L. N. Yurkova for participating in the performance of the experiment." Orig. art. has: 7 figures and 2 tables.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of

L 16582-65
ACCESSION NR: AP5000289

Crystallography, AN SSSR)

SUBMITTED: 18May64 ENCL: 00

SUB CODE: SS, NP NR REF SOV: 002 OTHER: 007

Card 3/3

L 28727-65 EWG(j)/EWT(m)/EPF(c)/EP F(n)-2/EPR/T/EWP(t)/EWP(b) Pr-4/Ps-4/Pu-4
IJP(c) JD/JG

ACCESSION NR: AP5004338 S/0070/65/010/001/0037/0046

AUTHOR: Klochkovskaya, V. V.; Troitskaya, N. V.; Pinsker, Z. G.

TITLE: Electron diffraction investigation of one of the cubic oxides of niobium

SOURCE: Kristallografiya, v. 10, no. 1, 1965, 37-46

TOPIC TAGS: niobium oxide, cubic crystal, thin film, space group, crystal structure

ABSTRACT: In view of the contradictory earlier published data on the structure and composition of niobium oxides, which are reviewed by way of introduction in some detail, the authors studied the Nb-O system by an electron diffraction method in the temperature range 300--700C. In addition to the niobium oxides known in the literature, they obtained also a cubic oxide with period a = 7.80 Å. Films of pure niobium were obtained by sputtering metal on freshly cleaved NaCl crystals, from a niobium plate ~0.5 mm thick bound in a helix and heated in vacuum not lower than 5--8 x 10-6 mm Hg. The positions of the niobium atoms in the unit cell were found to be 1(a), 1(b), 3(c), 3(d), 8(g). The potential peaks for these positions are 1345, 1730, 1135, 1530, and 145 volts, respectively, for an average

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L 28727-65

ACCESSION NR: AP5004338

internal potential of 8 V. The positions of the oxygen atoms were found to be

24(k)0yz, where y = 1/4, z = 0.47
24(k)0yz, " y = 1/4, z = 0.03
24(l)$\frac{1}{2}$yz, " y = 1/4, z = 0.47
24(l)$\frac{1}{2}$yz, " y = 1/4, z = 0.03

and the space group was found to be O_h^1. The niobium positions 1(a), 3(c), 3(d), and 8(g) and of the oxygen are defective. The possible limits of the composition of the oxide are from $NbO_{1.64}$ to $NbO_{1.68}$. The theoretical density is 3.05 g/cm^2. Orig. art. has: 8 figures and 2 tables.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography AN SSSR)

SUBMITTED: 15Jul64 ENCL: 00 SUB CODE: SS

NR REF SOV: 003 OTHER: 026

Card 2/2

L 42394-65 EWT(1)/EWT(m)/EWG(m)/T/EWP(t)/EWP(b)/EWA(h)/EWA(c) Pz-6/Peb
IJP(c) RDW/JD/JG/AT

ACCESSION NR: AP5008463 S/0070/65/010/002/0199/0204

AUTHOR: Imamov, R. M.; Pinsker, Z. G.

TITLE: Electron diffraction study of the compound $AgTlSe_2$

SOURCE: Kristallografiya, v. 10, no. 2, 1965, 199-204

TOPIC TAGS: crystallography, electron diffraction, semiconductor research, silver compound, thallium selenide, thin film, powder diagram, phase structure

ABSTRACT: Previous studies of ABX_2 type ternary compounds have shown that the powder diagrams of $CuTlSe_2$ and $AgTlSe_2$ are similar, which has led to the assumption that $AgTlSe_2$ has a copper pyrite structure. However, the powder diagram of $AgTlSe_2$ shows a great number of lines in the range of points from 15 to 50° (CuK_α-radiation), which is attributed to lattice distortions. Since extensive work has been done with two-component semiconductor compounds while the more complex ternary compounds have received little attention, the authors of this article made an electron diffraction study of the compound $AgTlSe_2$. The compound was vaporized and condensed in a vacuum on rock salt crystals and on celluloid sheets to form thin films $\sim 10^{-5}$-10^{-6} cm thick. It was found that the compound has two phases. Oblique

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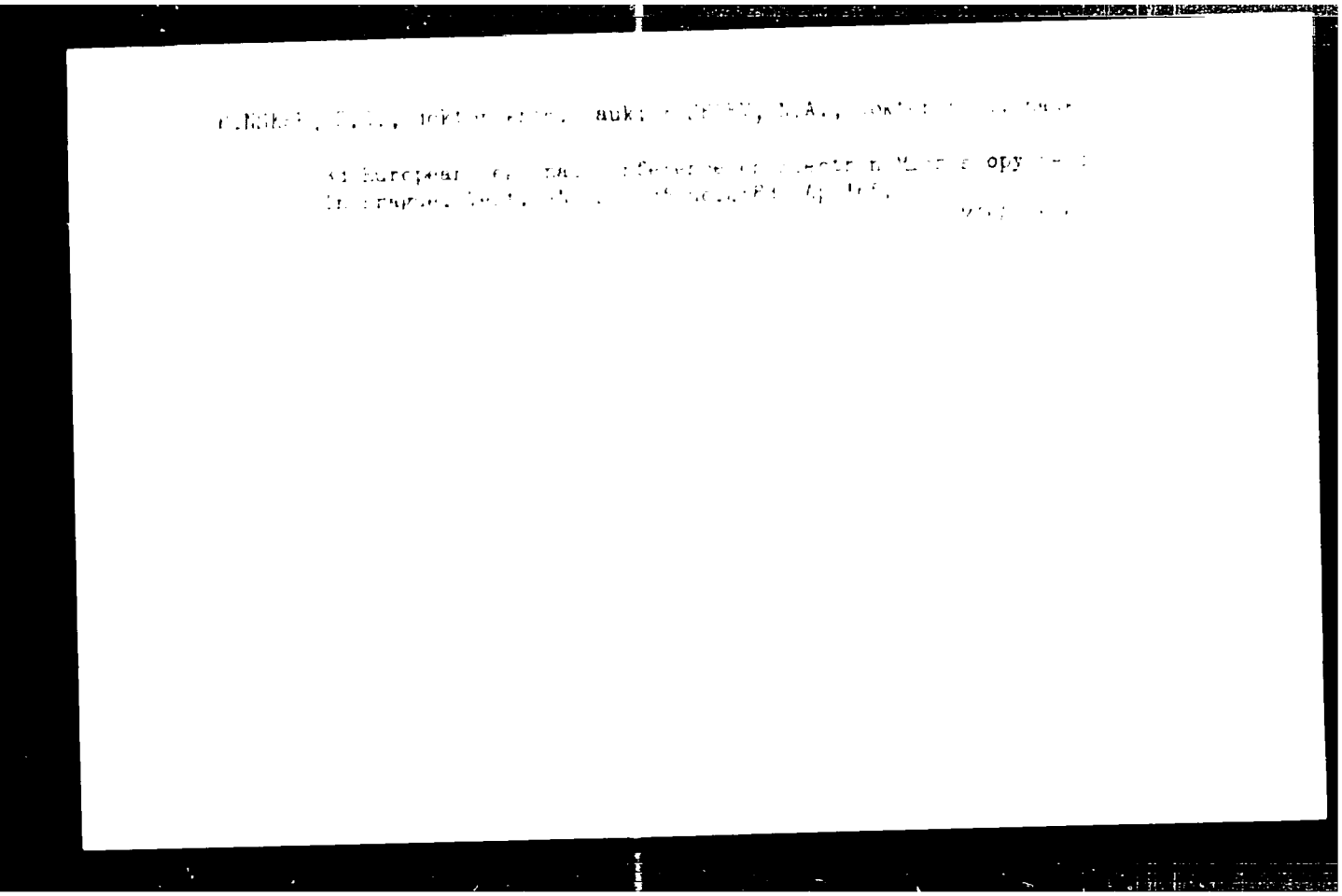
orientation was most marked in electron diffraction patterns of the first phase. Phase I lattice constants: $a = 9.70 \pm 0.04$; $c = 8.25 \pm 0.04$ Å; space group--D_{3d}^1, $N = 6$. The atoms occupy the following positions: 6Ag--6(k) with $x = 0.350$ and $z = 0.258$; $2Tl_I$--2(a) with $z = 0.258$; $4Tl_{II}$--4(h) with $z = 0.258$ $6Se_I$--6(i) with $x = 0.142$; and $6Se_{II}$--6(j) with $x = 0.142$. Parameter a' for phase II is very nearly equal to distance a while c' is approximately twice the distance c. The most probable space group for this phase is D_{6h}^4, $N = 12$. The silver and thallium atoms form plane centered (triangular) networks with vertices toward opposite sides in planes perpendicular to the c-axis. Between these are flat rings made up of six selenium atoms connected in an Se_6 molecule (see fig. 1 of the Enclosure). The characteristic stratification of $AgTlSe_2$ crystals is explained by the comparatively weak bonds between the plane (Ag + Tl) and Se layers. Orig. art. has: 9 figures, 1 table.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography, AN SSSR)

SUBMITTED: 230ct64 ENCL: 01 SUB CODE: SS, NP

NO REF SOV: 005 OTHER: 003

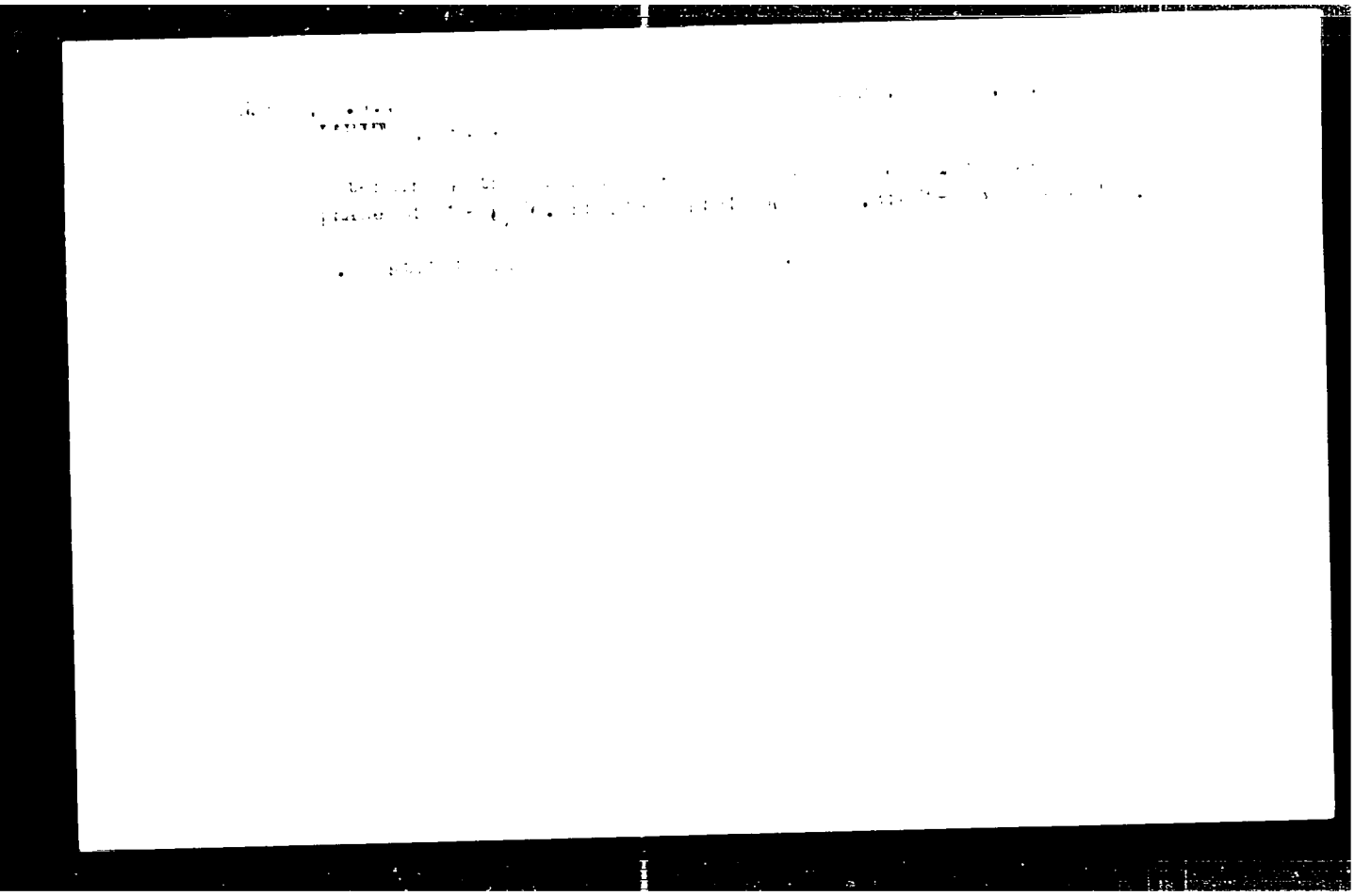
Card 2/3



IMAMOV, R.M.; PINSKER, Z.G.

Electron diffraction study of the compound AgTlSe. Kristallografiia 10 no.2:199-204 Mr-Ap '65. (MIRA 18:7)

1. Institut kristallografii AN SSSR.



APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001340920012-9"

L 09458-67 EWT(l)/EWT(m)/EWP(t)/ETI IJP(c) JD
ACC NR: AP6024663 SOURCE CODE: UR/0070/66/011/004/0505/0510

AUTHOR: Pinsker, Z. G.

ORG: Instituto of Crystallography AN SSSR (Institut kristallografii AN SSSR)

TITLE: Concerning a quantitativo verification of the relations of the dynamic theory

SOURCE: Kristallografiya, v. 11, no. 4, 1966, 505-510

TOPIC TAGS: x-ray scattering, crystal absorption, temperature dependence, line width, line shift, x-ray diffraction

ABSTRACT: The authors present a quantitative analysis of the "thick" crystal approximation in the dynamic theory of the scattering of x-rays by an absorbing perfect crystal, with particular attention paid to the dependence of the integral reflection of the thick crystal on the thickness and on the temperature of the sample. The analysis is carried out within the framework of the two-wave approximation of the theory for absorbing crystals. Simple formulas are derived for the half-width of the maximum and for the shift of the maximum of the transmitted wave relative to the Bragg angle. It is shown that on going over from a thin crystal to

Card 1/2 UDC: 548.732

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ACC NR: AP6024663

a thick crystal, a sharp asymmetry of the transmission function takes place for the transmitted wave relative to the Bragg angle, although the diffracted wave remains symmetrical. However, further increase in thickness reduces the asymmetry. Some numerical characteristics of the transmitted wave are presented for germanium and sodium chloride crystals. The author had useful discussions with the late A. M. Yelistratov concerning questions touched upon in the article. The author is also grateful to O. N. Yefimov for a discussion of problems contained in this paper. Orig. art. has: 24 formulas and 3 tables.

SUB CODE: 20/ SUBM DATE: 14Mar66/ ORIG REF: 004/ OTH REF: 011

Card 2/2

PINSKI, Marian

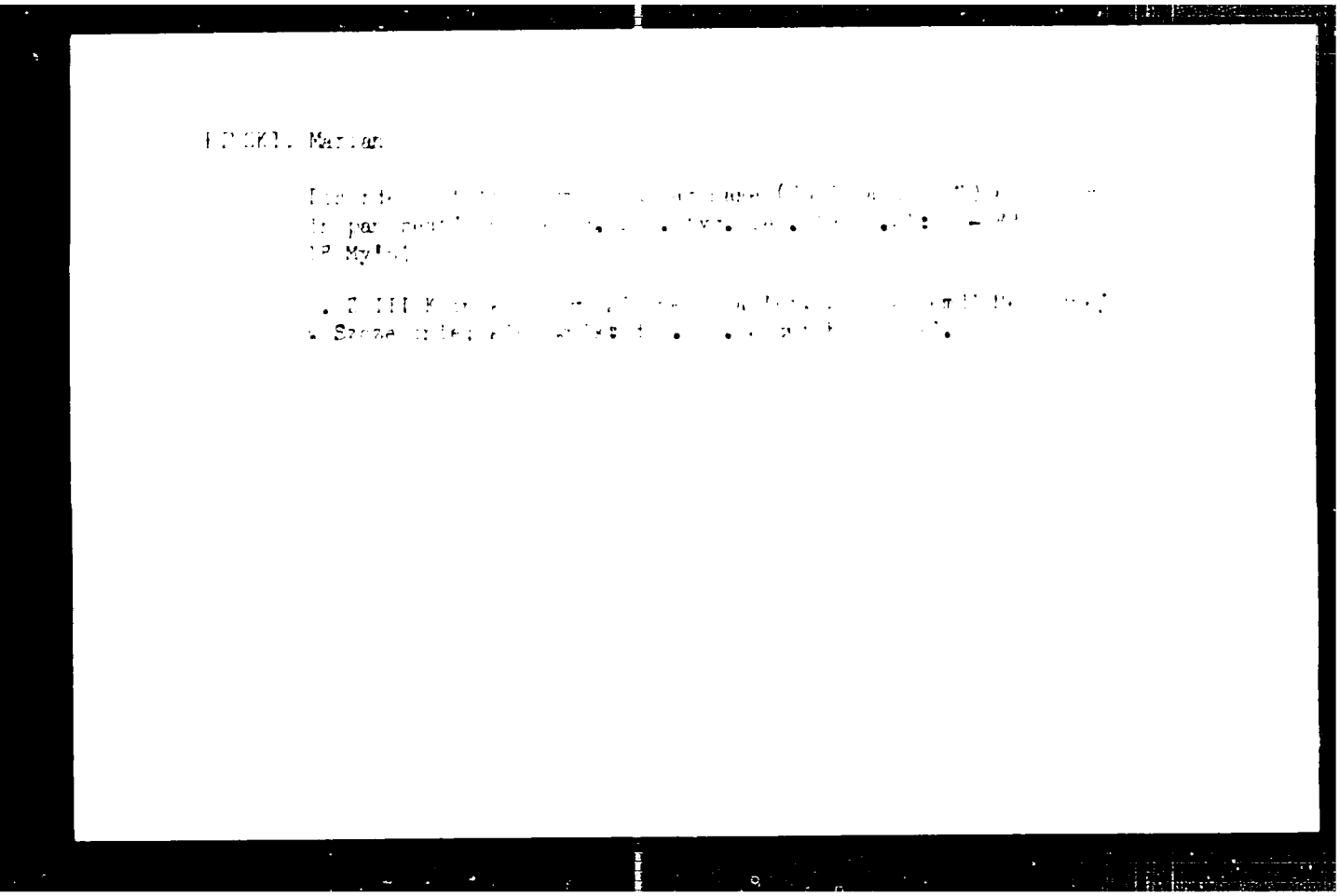
Preliminary rinsing of wounds and open fractures with spigot water. Polski przegl. chir. 33 no.7/9:1016-1019 '61.

1. Z I Kliniki Chirurgicznej AM w Szczecinie Kierownik: prof. dr T.Sokolowski.
(FRACTURES ther) (WOUNDS AND INJURIES ther)
(IRRIGATION)

PINSKI, Marian

On the problem of management of extensive open fracture. Polski przegl. chir. 31 no.4:571-575 May 59.

1. Z I Kliniki Chirurgicznej Pomorskiej A. M. w Szczecinie Kierownik: prof. dr T. Sokolowski.
(FRACTURES, ther.)



PINSKI, Marian

Clinical evaluation of serum transaminase [illegible] and [illegible] during the preoperative period after [illegible] [illegible] akad. med. [illegible]rowski [illegible]

[illegible] Akademii Medycznej [illegible] Kierownik: [illegible]

PINSKIY, A.

Precast monolithic foundations for the equipment of rolling mills. Prom. stroi. i inzh. soor. 2 no. 1:14-19 Ja '60. (MIRA 14:1)

1. Glavnyy inzhener proyektrov Pridneprovskogo Promstroyproyekta.
(Concrete footings)
(Rolling mills--Equipment and supplies)

PINS'KIY, A.; OZERNIKH, T.; DENISENKO, L., veduchiy redaktor; NOVIK, O., tekhnichniy redaktor

[New working methods of Spinner O.IE.IEvlakh] Novi robochi pryiomy priadyl'nytsi O.IE IEvlakh. Kyiv. Derzh.vyd-vo tekhn. lit-ry URSR, 1956. 15 p. (MLRA 10:4)
(Spinning)

PINSKIY,A.A., (Moskva)

"How ships are built" S.S.Grishchenko, N.A.Fedorov. Reviewed by A.A.Pinskii. Fiz. v shkole 15 no.5:85 S-O '55. (MLRA 9:1)
(Shipbuilding) (Grishchenko,S.S.) (Fedorov,N.A.)

BRONFMAN, V.V.; PINSKIY, A.A.

Studying Ohm's law in grade 7. Fiz. v shkole 18 no.[illegible] (MIRA 11:9)
S-O '58.

1.692-ya srednyaya shkola, Moskva.
(Ohm's law)

KAMENETSKIY, S.Ye.; PINSKIY, A.A.

Device for demonstrating mechanical vibrations. Fiz. v shkole 18 no.2:62-64 Mr-Ap '58. (MIRA 11:2)

1. 692-ya srednyaya shkola, Moskva.
(Vibration--Electromechanical analogies)

KAMINSKIY, I.N., kand. ekonom. nauk; LABKOVSKIY, B.Ye., kand. ekonom. nauk; [illegible], kand. tekhn. nauk; PINSKIY, [illegible], inzh.; TYUFKINA, N.I., inzh.; KHOLOG, [illegible], inzh.; KHELEMENDIK, [illegible], inzh.; IFFNER, Yu.I., inzh.

Problem of a standard structure of management, standard staffs, and norms on the number of engineers, technicians and employees in coal mines. Ugol' 40 no.8 [illegible] Ag '65. (MIRA 18:9)

1. Institut gornogo dela im. A.A. Skochinskogo (for all except Khodos, Khelemendik, Iffner). 2. Donetskiy nauchno-issledovatel'skiy ugol'nyy institut (for Khodos, Khelemendik). 3. Gosudarstvennyy institut po proyektirovaniyu shakht v yuzhnykh rayonakh SSSR (for Iffner).

[illegible]V-17-[illegible]

AUTHORS: Bronfman, V.V., and Linskiy, A.A. (Moscow, [illegible] Secondary School)

TITLE: Instruction on Ohm's Law in the 7th Class (Izucheniye zakona Oma v VII klasse. Aid to Beginning Teachers (V pomoshch' nachinayushchim uchitelyam)

PERIODICAL: Fizika v shkole, 19[illegible], Nr [illegible], pp 41-46 (USSR)

ABSTRACT: To avoid confusion in the pupils' minds, the authors consider it expedient to teach Ohm's law, in the 7th class, in the following order: 1) quantity of electricity and strength of current, their units and method of measuring ([illegible] hours). 2) The concept of voltage, of measuring units and methods ([illegible] hours). 3) Resistance of conductors and Ohm's law (2 hours). The authors express their opinion how the 9 lessons should be conducted, what questions the students should be asked and how the experiments should be carried out. There are [illegible] tables, [illegible] drawings and 1 Soviet reference.

Card 1/[illegible]

[redacted]

Instruction of basic law in the 7th class. Aid to beginning teachers.

ASSOCIATION: [illegible]-ya srednyaya shkola, Moskva (692nd Secondary School, Moscow)

1. Electricity--Study and teaching

Card 2/2

PINSKIY, A.A.

The topic "Alternating current" and the methodology of teaching it. Fiz. v shkole 17 no.3:40-49 My-Je '57. (MLRA 10:6)

1. [illegible]-ya srednyaya shkola, g. Moskva.
(Electric currents, Alternating--Study and teaching)